OGC API - Catalogues Standards Working Group Charter, OGC 19-060

- **Author Name(s):** Panagiotis (Peter) A. Vretanos, Tom Kralidis, Clemens Portele
- **Email:** pvretano@cubewerx.com, tom.kralidis@canada.ca, portele@interactive-instruments.de
- **DATE:** 28-JUN-2019
- **CATEGORY:** SWG Charter

To: OGC members & interested parties

A new OGC Standards Working Group (SWG) is being formed. The OGC members listed below have proposed the "OGC API - Catalogues SWG". The SWG proposal provided in this document meets the requirements of the OGC Technical Committee (TC) Policies and Procedures.

The SWG name, statement of purpose, scope, list of deliverables, audience, and language specified in the proposal will constitute the SWG's official charter. Technical discussions may occur no sooner than the SWG's first meeting.

This SWG will operate under the OGC IPR Policy. The eligibility requirements for becoming a participant in the SWG at the first meeting (see details below) are that:

- You must be an employee of an OGC member organization or an individual member of OGC;
- The OGC member must have signed the OGC Membership agreement;
- You must notify the SWG chair of your intent to participate to the first meeting. Members may do so by logging onto the OGC Portal and navigating to the Observer page and clicking on the link for the SWG they wish to join and;
- You must attend meetings of the SWG. The first meeting of this SWG is at the time and date fixed below. Attendance may be by teleconference.

Of course, participants also may join the SWG at any time. The OGC and the SWG welcomes all interested parties.

Non-OGC members who wish to participate may contact us about joining the OGC. In addition, the public may access some of the resources maintained for each SWG: the SWG public description, the SWG Charter, Change Requests, and public comments, which will be linked from the SWG's page.

Please feel free to forward this announcement to any other appropriate lists. The OGC is an open standards organization; we encourage your feedback.

Purpose of the Standards Working Group

The purpose of this Standards Working Group is to:

- develop a new version of the Catalogue Service standard (HTTP Protocol Binding) as a Web API.
- develop new parts of the OGC API Catalogues multipart standard
- develop corrigenda for previous versions of the catalogue standard(s)

Business Value Proposition

In order to be able to exploit geospatial resources (e.g., feature collections, coverages, etc.) and other related resources (code lists, definitions, etc.), end-users must be able to discover and fetch those resources. The proposed Web API provides the methods and apparatus to support

- discovery of geospatial resources by standardizing the way collections of descriptive information about the resources (metadata) are exposed;
- discovery and sharing of related resources that may be referenced from geospatial resources or their metadata by standardizing the way all kinds of records are exposed and managed.

For providers of geospatial resources who need to catalogue their holdings, the catalogue provides a uniform means for indexing those resources as metadata records. The same uniform interface may be used for managing and sharing the related resources.

For developers building infrastructures to host, harvest and/or manage collections of geospatial resources, the standard defines the bare minimum needed to describe those resources. It is customizable for particular domains of interest.

Finally, users of geospatial resources are often in a position of having to construct specialized processing flows for each different collection of geospatial resources that they consume. The catalogue is defined to reduce such complexity and encourage the use of common tooling.

Scope of Work

The current versions of the catalogue standards (i.e. CAT 2.0, CAT 3.0) — developed in the early 2000s — use a Remote-Procedure-Call-over-HTTP architectural style using XML for any payloads. This was considered state-of-the art at the time but this legacy is now badly outdated and does not conform to current web development practices.

The next version ("OGC API - Catalogues") is intended to break free of this legacy and will specify a modernized service that aligns with the current architecture of the Web and the Spatial Data on the Web Best Practices (https://www.w3.org/TR/sdw-bp/). The key changes shall be as follows.

- Name:
  The formal proposed name of the new standard is "OGC API - Catalogues - Part 1: Core". However, one of the first actions of the SWG shall be to settle on a name. Other proposed names include "OGC API - Metadata" and "OGC API - Records".
- Scope:
  Catalogues have, in the geospatial domain, traditionally been used to access collections of formal metadata such as FGDC, ISO19115 or ISO19119 metadata documents. While the intent of the CAT4.0 SWG is to preserve this functionality going forward, there is also a desire to broaden the scope so that a catalogue can also act as a registry of other types of descriptive metadata about resources such as code lists.
- Architecture:
  "OGC API - Catalogues" shall support and be consistent with HTTP and HTTPS. In previous versions, HTTP has been used mainly as a tunnel for CAT messages. In addition, the resources

provided by the service shall include hypermedia controls in their representations to guide the user of a catalogue.

- Encodings:
  Previous versions were strongly tied to XML (Capabilities documents, XML schemas, Filter Encoding expressions, etc.). This version shall be written with JSON, HTML, and XML as primary encodings in mind, given these are common encodings today. No encoding shall be mandatory and other encodings may be used as well. HTTP is designed to support the use of multiple formats and defines rules about how servers can return the encoding that the client can best handle (“content negotiation”).
- Basic information model:
  Previous versions of the CAT 3.0 standard used the Dublin Core set of metadata (encoded as XML) as the basic, cross-platform, information model or set of queryables that all implementations needed to support. "OGC API - Catalogues" will review the use of this model and strongly consider using DCAT (https://www.w3.org/TR/vocab-dcat/) instead.
- Reuse:
  The use of CAT-specific resources or components will be minimized and, where available, existing industry-standards that are commonly used by developers shall be used instead. The most important example for this is the use of an OpenAPI definition instead of OGC-specific "Capabilities" documents.
- Modularization:
  The CAT 3.0 standard, together with the Filter Encoding 2.0 standard, specifies a powerful, but complex service interface. In order to better support implementations that only need a relatively simple service or client, the next version shall be modularized into multiple parts. The first part (the "core") shall specify a simple interface to access metadata from catalogues that is sufficient for cases that do not require support for transactions, complex data structures, rich queries, etc. Additional parts will specify extensions to this part to meet the needs of use cases that require such capabilities.
- Security:
  CAT 3.0, like many other OGC web standards, does not specify how services may be secured and some requirements are incompatible with secured services that still conform to the standard. The use of OpenAPI would address this issue, too. Catalogues Services may be secured using security schemes that are commonly used on the Web today (e.g., OAuth2) and that developers are familiar with.

As a result of this modernization, "OGC API - Catalogues" implementations will not be backwards compatible with CAT 3.0 implementations per se. However, it is a design goal to define "OGC API - Catalogues" in a way so that the interface can be mapped to a CAT 3.0 or CAT 2.0 implementations - at least for the capabilities that were already in scope for those standards.

"OGC API - Catalogues" is intended to be simpler and more modern, but still an evolution from the previous versions and their implementations.

The goal is to develop part 1 of "OGC API - Catalogues", the foundation for the new version, as quickly as possible and work on additional parts after that, driven by community interest.

An important aspect is to ensure that implementing the standard will lead to efficient implementations, happy developers of both server and client components, and satisfied users of

such components.

This has several aspects:

Before finalizing parts of the next version of "OGC API - Catalogues", it must be verified that these goals are met, i.e.:

- working implementations of all capabilities must be available and tested; and
- Implementation feedback must be taken into account.

A consequence of this is that the period between the availability of what is considered a mature draft and the finalization of the specification may be longer than in the past, depending on the availability of evidence about the suitability of the specification based on implementations.

Developers, including those that are not active in OGC or ISO/TC 211, should be encouraged as early as possible to implement the draft and provide feedback. An aspect of this is public access to drafts from the beginning.

To this end, the SWG intends to use GitHub in the development of this standard as this is the environment may developer are familiar with and user on a daily basis.

Statement of relationship of planned work to the current OGC standards baseline

This standard is intended to be a major revision to the Catalogue Services standards published by OGC. This revision will take advantage of Web API patterns identified in the OGC API standards efforts (e.g., OGC API - Features, AKA WFS 3.0) to better align with current and emerging IT practices. "OGC API - Catalogues" does overlap in scope with the existing OGC Catalogue Services standards.

What is Out of Scope?

Standards are important for interoperability. At the same time, it is important that standards only state requirements that are important for a significantly large group of users. Proposals for new parts of OGC API Catalogues or change requests to existing parts must identify the user group that will benefit from the proposal and include the commitment for three independent implementations for each proposed conformance class; otherwise the proposal will be considered out-of-scope.

OGC API Catalogues is a modular, multi-part standard. Developing profiles of OGC API Catalogues should not be necessary and is, therefore, out-of-scope for the SWG. If a community has a need to develop a profile, the profile should be specified and governed by that community.

Specific Existing Work Used as Starting Point

The starting point for the work shall be the "OGC® Catalogue Services 3.0 Specification - HTTP Protocol Binding", OGC 12-176r7. The work shall also be informed by the following specifications and by recommendations found in:

- OGC/W3C Spatial Data Working Group on the Web Best Practices (https://www.w3.org/TR/sdw-bp/);
- OGC Geospatial API White Paper (OGC 16-019r4);
- OGC API - Features - Part 1: Core candidate standard, OGC 17-069r2; and
- SpatioTemporal Asset Catalog API Specification (https://github.com/radiantearth/stac-spec).

Each of these documents recommends an emphasis on resource oriented APIs in future OGC standards development including use of tools such as OpenAPI. In addition, the following metadata standards shall be reviewed:

- Data Catalogue Vocabulary (DCAT) (https://www.w3.org/TR/vocab-dcat/);
- Geographic information — Metadata — XML schema implementation (ISO/TS 19139:2007);
- ebXML Registry Information Model, Version 3.0 (http://docs.oasis-open.org/regrep/regrep-rim/v3.0/regrep-rim-3.0-os.pdf).

Is This a Persistent SWG

YES

When can the SWG be Inactivated

The SWG can be inactivated once the final multipart standard has been developed and change requests become minimal or not applicable for consideration. The SWG can be re-activated at any time.

Description of deliverables

The following deliverables will result from the work of this SWG:

- A final version of the "OGC API - Catalogue - Part 1: Core" document for submission to the TC; and
- At least three prototype implementations of the core based on the standard — although more would be preferred.
- Zero or more additional parts as time and desire permits.

Part 1 will cover read-only access to records and simple query capabilities.

Capabilities for richer queries or to create, update or delete records will be specified in additional parts.

IPR Policy for this SWG

RAND-Royalty Free

Anticipated Audience / Participants

Since we want implementations to proliferate the primary audience for the "OGC API - Catalogues" suite of standards shall be developers implementing servers. Additionally, target audiences of the standard shall include:

- deployers of catalogue services profiles; and
- users of catalogue services.

Domain Working Group Endorsement

Other informative information about the work of this SWG

Collaboration

The SWG intends to use the following GitHub repository for the development of the new standard: https://github.com/opengeospatial/CAT4.0.

Like the work done by the WFS/FES SWG, the GitHub repository will be open to the public to solicit participation and feedback from OGC and non-OGC members.

Additional collaboration resources include periodic teleconferences, email and/or a gitter channel.

Similar or Applicable Standards Work (OGC and Elsewhere)

The following similar standards work may be applicable to the work of the proposed SWG:

- OpenGIS Catalogue Service Implementation Specification 07-006r1
- OGC® Catalogue Services 3.0 - General Model 12-168r6
- OGC® OpenSearch Geo and Time Extensions 10-032r8
- OGC OpenSearch Extension for Earth Observation 13-026r8

Details of first meeting

The first meeting of the SWG will be within four weeks of approval of the SWG.

Projected on-going meeting schedule

The work of this SWG will be carried out primarily on github and via email, conference calls, with potential face-to-face meetings at OGC TC meetings as agreed to by the SWG members. The teleconference calls will be scheduled as-needed and posted to the OGC portal.

Supporters of this Charter

The following persons support this SWG and are committed to the Charter and projected meeting schedule.

Name	Organization
Roger Bracklin	Envitia
Paul van Genuchten	Geocat
Chris Holmes	Planet Labs
Frederic Houbie	Hexagon
Tom Kralidis	Environment and Climate Change Canada, Meteorological Service of Canada
Clemens Portele	interactive instruments
Angelos Tzotsos	Open Source Geospatial Foundation
Panagiotis (Peter) A. Vretanos	CubeWerx Inc.

Convener

- Panagiotis (Peter) A. Vretanos